# EFFECTIVENESS OF ICE APPLICATION ON PAIN PERCEPTION AMONG CHILDREN RECEIVING VACCINATION IN SELECTED HOSPITAL, KANYAKUMARI DISTRICT.

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# CERTIFICATE

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# ABSTRACT

A quasi experimental study to assess the effectiveness of ice application on pain perception among children receiving vaccination in selected hospitals, kanayakumari district.

The Quasi Experimental post test only control group design was adopted. the among children receiving vaccination in Gerdi Gut perle Agasthiyar child care centre ,vellamadam and Dr. Jayaharan memorial hospital, Nagercoil ( study group and Control group) were chosen for the study. The sample size was 60 and was drawn through purposive sampling technique. The pain score was assessed by using wong backers pain rating scale. Ice application was administered for study group.Immediately assess the pain perception. . The data gathered were analyzed by descriptive and inferential statistical method and interpretations were made on the basis of the objectives of the study.

Majority of demographic variables includes, in study group 15(50%) of them were male children, 22 (73.4%) receive supportive system from mother, 29 (96.7%) of them were awaked during vaccination, , 26 (86.7%) of them had 4- 6 years of experience of the injecting nurse, 23 (76.7%) of them were between 10 kg to 12kg, 30 (100%) of them had previous pain experience.

In control group17 (56.7 %) of them were female children, 12 (40%) receive supportive system from mother,21 (70%) of them were awakened, 16 (53.3%) of them had 4 to 6 years experience, 18 (60%) of them were from 10 kg to 12kg, 30 (100%)of them had previous pain experience.

In study group the mean value is 6.8,the standard deviation was 2.65 and control group the mean value is 8.66, the standard deviation was 1.34 and ‘T’ value is 5.9 which is significant at $p<0.05$.It shows that Ice application was effective among children receiving vaccination. Hence the research hypothesis H1 is accepted There is no significant association ($p<0.05$) between the pain perception among children receiving vaccination in study and control group with their selected demographic variables in study group and control group. Hence H2 is not accepted . Thus the result of the study showed that Ice application was effective in Children receiving vaccination.

# CHAPTER I

# INTRODUCTION

# CHAPTER I

## INTRODUCTION

Children, like apples, are humans between the stages of birth and puberty. Children are the blessings of the Lord. As stewards of God's children, parents are responsible for helping the children to grow physically, intellectually, emotionally and spiritually. Recognition of childhood, as a state different from adulthood, began to emerge in the 16th and 17th centuries. Society began to relate to the child not as a miniature adult but as a person of a lower level of maturity needing adult protection, love and nurturing.

Immunization is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease. Immunization is a proven tool for controlling and eliminating life-threatening infectious diseases and is estimated between 2 and 3 million deaths each year. It is one of the most cost-effective health investments, with proven strategies that make it accessible even to the most hard-to-reach and vulnerable populations.

Immunization is one of the most co-effective interventions for disease prevention. The vaccines for the six killer diseases are already included in the National Immunization Schedule of the country. But in view of the severity of other infectious diseases during the past several decades, the government of the developing countries like India is trying to include new vaccines viz. Hib vaccine, Hepatitis B vaccine, Hepatitis A, Typhoid vaccine, Pneumococcal vaccine etc. into the routine immunization programme. These vaccines are called as optional vaccines.

Diphtheria is an acute infectious disease caused by toxigenic strains of corynebacterium diphtheria and it is characteristically confined to respiratory tract. These bacteria present in throat and produce powerful exotoxins which affect heart and nervous system. This disease usually attacks nose, throat and tonsils. Diphtheria bacilli were discovered in 1883-84 by the two German physicians, Klebs and Loffler in bacteriological specimens from the throat of the patients. These bacilli are,

therefore sometimes spoken of as Klebs-Loffler or K-L Bacilli. This disease was first called Diphteritis by Bretonnean, who recognized it as a distinct malady in 1826.

Immunization of Diphtheria can be done by using a combine or mixed vaccine. DPT vaccine for immunization of infants and the preparation of choice is DPT. Firstly because, the infant can be immunized simultaneously against three disease. That is Diphtheria, Pertusis, and Tetanus.

Pertusis is an acute infectious disease, extremely dangerous especially during infancy, caused by Bordetella pertusis. Pertusis is also called as whooping cough, which comes with or without whooping. It is an acute disease of respiratory tract characterized by whoop" (Loud crowing inspiration). The Chinese call it as "Hundred days cough."

According to national policy, immunization is done against diphtheria whooping cough and tetanus simultaneously by administrating 3 doses, each dose consisting of 0.5 ml of DPT vaccine IM at 1-2 months interval, starting when the infant is about 6 week old. An effective vaccine is also available against pertusis alone. It is killed as whole cell preparations.

Tetanus is an acute and serious infectious disease, which is caused by clostridium tetani, because of the hardness of muscles of neck and face and difficulty in opening the month, it is also called "Lockjaw". Tetanus occurring in newborn is called tetanus Neonatorum. Tetanus is an acute neuromuscular disorder characterized by paroxysms of convulsive tonic and sometimes clonic. Contraction of voluntary muscles specially the masseters (Trismus or "Lock Jaw") facial muscles (Risus sardonicus) the muscles of the back and neck (Opisthotonus) and those of the lower limbs and abdomen.

Tetanus is best prevented by active immunization with tetanus toxoid. Two preparations are available for active immunization namely combined vaccine example Combined vaccine – DPT and Monovalent vaccines.

Tetanus vaccine is offered routinely to infants (Expanded immunization programme) in combination with diphtheria vaccine and killed B. Pertusis is organism as DPT vaccine. According to the national immunization schedule the primary course of immunization consists of 3 doses of DPT, at intervals of 4- 8 weeks of age starting as 6 weeks of age, followed by a booster dose at 18 months of age and a second booster (Only DT) at 5-6 years of age and a third booster (Only TT) at 10 years of age.

Pain is an universal, complex and subjective experience. Pain is an unpleasant feeling . Nurses work in almost all settings and are often associated with the people who are suffering from pain. They spend a lot of time with the children who are suffering with pain than any other health care provider. Immunizations may also cause some pain. This pain can be a source of anxiety and distress for both parents and child.

Immunization has been one of the most significant and cost-effective public-health interventions to decrease childhood morbidity and mortality. The World Health Organization (WHO) launched the Expanded Programme on Immunization (EPI) in 1974 with focus on the prevention of six vaccine-preventable diseases of the childhood by 2000. This was implemented by the Government of India in 1978. On 19th November, 1985, the Universal Immunization Programme was introduced in India, aiming at covering at least 85% of all infants by 1990. Further, a national sociodemographic goal was set up in the National Population Policy 2000 to achieve universal immunization of children against all vaccine-preventable diseases of the childhood by 2010.

The taxonomy committee of International Association (IASP) defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage.” Each individual learns the application of the word 'pain' through experiences related to injury in early life. Painful medical procedures for children begin with heel-sticks and injections at birth and continue throughout childhood state. Children receive immunization injections multiple times throughout childhood and adolescence.

Ice application is one of the simplest, safest, and most effective self care technique for injury, pain, or discomfort in muscles and joints. Ice will decrease

muscle spasms, pain, and inflammation to bone and soft tissue. So ice can be used initially at the site of immunization to reduce discomfort, pain, or injury. Ice initially constricts local blood vessels and decreases tissue temperature. This constriction decreases blood flow and cell metabolism, which can limit hemorrhage and cell death in an acute traumatic injury. After 20 minutes of ice application blood vessels in the injured area, dilate (open) slowly, increasing the tissue temperature. This effect is termed as "reactive vasodilatation.

**Background Of The Study**

India is a country with almost 1.2 billion people. It is the second most populous country of the world and has changing socio-political demographic and morbidity patterns. Despite several growths orientated policies adopted by the government, the widening economic, regional and gender disparities are posing challenges for the health sector. Communicable diseases such as typhoid, infectious hepatitis, measles, malaria, tuberculosis, whooping cough, pneumonia and reproductive tract infections dominate the morbidity pattern, especially in rural areas. However, non-communicable diseases such as cancer, blindness, mental illness, hypertension, diabetes, HIV/AIDS, accidents and injuries are also on the rise.

According to the world population statistics, over 40% of the population is constituted of the children population. Worldwide, children represent a higher proportion of the population, in which the children younger than 15 years accommodate 1.8 billion (28%) of the world’s 6.4 billion population.

During 2012, 131 (68%) countries achieved ≥90% national DTP3 coverage, and 59 (30%) achieved ≥80% DTP3 coverage in every district. DTP3 coverage was 80%–89% in 34 (18%) countries, 70%–79% in 13 (7%) countries, and <70% in 16 (8%) countries. Among the 22.6 million children who did not receive three DTP doses during the first year of life, 16.3 million (72%) lived in 10 countries, among which 12.4 million (55%) lived in three countries: 30% in India (72% DTP3 coverage), 17% in Nigeria (41% DTP3 coverage), and 7% in Indonesia (64% DTP3 coverage) . An estimated 12.6 million (56%) children did not receive the first DTP dose, while nearly 10 million (44%) started but did not complete the 3-dose series.

DTP3 coverage was estimated at 20 per cent of the world's children immunized in the first year of life; it had increased to an estimated 83 per cent by the end of 2012 (2012 revision completed in July 2013). Polio is on the verge of eradication. Deaths from measles, a major killer, declined by 71 per cent worldwide and by 80 per cent in Sub-Saharan Africa between 2000 and 2011. Immunization against tetanus has saved hundreds of thousands of mothers and newborns; according to WHO estimates, 59,000 newborns died from neonatal tetanus in 2011, a 93 per cent reduction from the situation in the late 1980s. As of July 2013, 31 of 59 priority countries have eliminated maternal and neonatal tetanus (meaning a reduction in rates to less than 1 case per 1,000 live births per district in a country), leaving 28 countries at high risk.

Approximately three million children die each year of vaccine-preventable diseases. Recent estimates suggest that approximately 34 million children are not completely immunized, with almost 98% of them residing in developing countries. Vaccine security is not fundamental to meet the immunization goals and long-term funding remains a serious issue as developing country governments and the international community have not made firm commitments in this regard.

**Significance And Need For The Study**

Almost one-fourth of the children born in developing countries die before their fifth birthday, in sharp contrast to only 2% in developed countries. 71-73% of under five mortality is in the first year of life. The neonatal mortality accounts for 45-62% of infant deaths in India. The major causes of sickness and death of children in India is mainly because of infectious disease many of which are preventable by administering vaccines. The vaccination coverage of the eligible population should therefore result in reduction of the disease incidence in the country.

Children are precious to their family. Parents want their children to be safe from diseases, for this reason, they choose immunization as a preventive measure. Routine immunization is an almost universal experience for children. Immunization is

a proven tool for controlling and eliminating life threatening infectious diseases and is estimated to avert 2 million deaths each year.

Immunization is one of the best cost effective health investments, with proven strategies which make it accessible to even the most hard to reach and vulnerable population. Immunization has well defined target groups. It can be implemented effectively through outreach programmes, and vaccination does not require any major lifestyle modifications.

Immunization is painful and children show behavioural distress to pain while receiving immunization. A study was conducted at the university of Georgia to isolate and compare children`s procedural pain and anxiety. According to the study, injections for vaccinations, the most common source of iatrogenic pain in childhood, are administered repeatedly to almost all children throughout infancy, childhood and adolescence. The pain associated with such injections is a source of distress for children, their parents and those administering the injections. If not addressed, this pain can lead to preprocedural anxiety in the future, needle fears and health care avoidance behaviours, including nonadherence with vaccination schedules.

Pain relief is enhanced when individual pain-relieving strategies are combined. Therefore, health care providers are encouraged to use a mix of strategies to mitigate pain. Parents can be enlisted to help combine and coordinate many of these strategies. For instance, parents can prepare their children, apply topical anesthetics, bring a distraction aid to the appointment, coach the child during deep breathing and hold the child. When the researcher went to a child health centre, she experienced that some children had severe pain during vaccination and some children refused to get into the treatment room. That time the researcher felt the need of reducing the pain during vaccination. There are various strategies which may help in the reduction of pain. Among them, the researcher felt that ice application before vaccination will help to reduce the pain perception in children

**Statement Of The Problem**

An Quasi experimental study to evaluate the effectiveness of ice application on pain perception among children receiving vaccination in selected hospitals, kanayakumari district.

**Objectives**

To assess the post test level of pain perception among children receiving vaccination in study group and control group.

To evaluate the effectiveness of ice application on pain perception among children receiving vaccination in study group.

To find out the association between the level of pain perception among children with selected demographic variables in study group and control group.

**Research Hypotheses**

H1: There is significant difference in the post test level of pain perception among children receiving vaccination in study group and control group.

H2: There is significant association between the post test level of pain perception with selected demographic variables in study group and control group.

**Assumption**

Ice application may reduce the pain due to vaccination.

## Operational Definitions

### Evaluate

Evaluate refers to the identification of difference between the post test level of pain perception in study group and control group and finding the effectiveness on pain perception among children receiving DPT booster vaccination.

### Effectiveness

Effectiveness is the significant change in the level of pain among children receiving DPT booster vaccination in study group and can be measured in comparison with control group.

### Ice Application

It refers to the application of ice cubes on the site of vaccination for 30 seconds immediately prior to the vaccination by the investigator.

### Pain Perception

It refers to the unpleasant sensation experienced by the child while receiving vaccination which can be measured by Wong Backers faces pain rating scale.

### Children Receiving Vaccination

It refers to the children between the age group of 15 to 18 months receiving DPT booster vaccination.

## Delimitations

The study was limited to,

Only Children receiving DPT booster vaccination

Four weeks for data collection.

Sixty sample, 30 study group and 30 control group.

**Projected Outcome**

The findings of the study will help the vaccinated children to reduce their pain during vaccination.

**Conceptual Frame Work**

The conceptual frame work adopted for this study was based on Kolcaba comfort model (2007). The first article about the theory of comfort was published in 1994 by Dr. Kathy Kolcaba. Comfort theory has been tested and supported in several patient population including psychometric and experimental studies. Nurse researchers have utilized this theory in settings such as labour and delivery, peri and intra operative care, critical care, burns units, gynaecological practice and newborn nurseries.

This conceptual framework shows the different concepts linked together in nursing care. Through years of analyzing and working on the midrange theory of comfort, Kolcaba brought out three technical senses of comfort, they are relief, ease and transcendence. Relief is the state of a patient who had a specific need met, ease is the state where the patient is calm and contented and finally, transcendence is when the patient went beyond the comfort need. Health care needs, nursing interventions and intervening variables are factors to consider so that the goal of enhanced comfort of the patient can be achieved in all the context of the human experience which are physical, psycho spiritual, socio-cultural and environmental. Another concept that was incorporated into the framework is that of institutional integrity. If people are inspired to do better in terms of health care, it will increase utilization of health care facilities and services leading to continuous assessment of the health care system to meet the demands. This will in turn result to improvements made to the system.

**Health Care Needs**

The health care need identified by the researcher is to reduce the pain of the child during vaccination.

**Intervening Variables**

Assessing the level of pain after vaccination.

**Nursing Intervention**

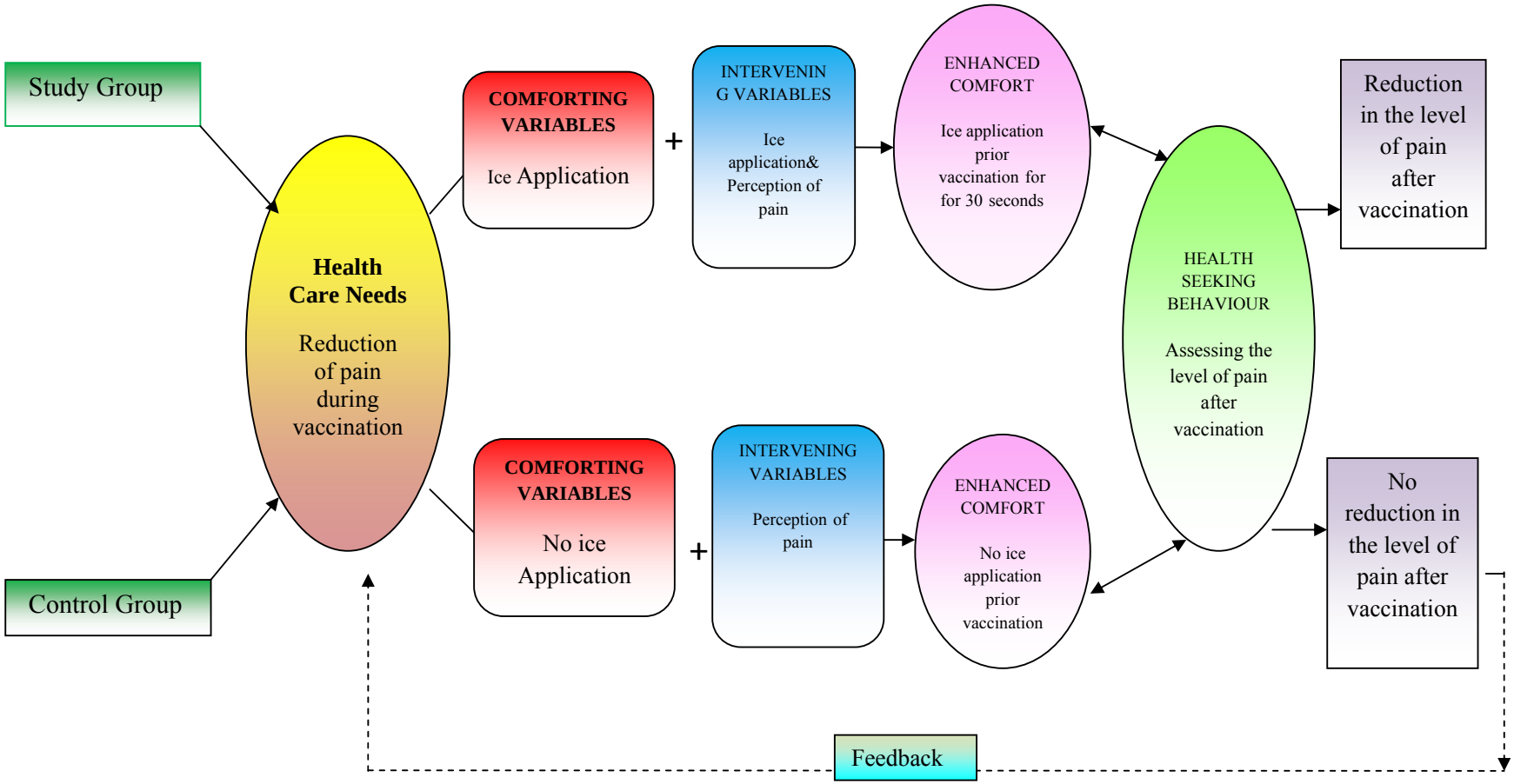
Ice application to the injection site for 30 seconds prior to vaccination.

**Health Seeking Behaviour**

Internal and external behaviour, influences the comfort status. In this study the internal criterion is minimizing the pain during vaccination. The external behaviour is applying ice over the injection site, and assessing the pain immediately by wong bakers faces rating scale.

**Enhanced Comfort**

When comfort needs are met, patients are strengthened. Here in this study, as a result of ice application pain reduction may be effective or ineffective . If the reduction of pain is effective in both groups, compare the effectiveness. If the reduction of pain is ineffective further nursing intervention can be planned.




**CONCEPTUAL FRAMEWORK BASED ON KOLCABA COMFORT THEORY (1994)**

**Fig 1.1**

# CHAPTER II

# REVIEW OF LITERATURE

# CHAPTER II

# REVIEW OF LITERATURE

A literature review is a summary of previous research topic. Literature reviews can be either a part of larger report of a research project, a thesis or bibliographic essay that is published separately in a scholarly journal. The purpose of literature review is to convey to the reader what knowledge and ideas have been established on a topic and what are the strength and weaknesses.

The review of literature presented in this chapter is organized systematically.

Section A : Studies related to non pharmacological pain reduction techniques.

Section B :Studies related to Vaccination.

Section C: studies related to pharmacological pain reduction technique during injection.

Section D: studies related to Ice application during vaccination.

**Section A : Studies related to non pharmacological pain reduction techniques.**

**Kavitha .k (2013)** conducted a study to assess the effectiveness of manual pressure on lumbar region to reduce pain during intra muscular injections for infants at Bangalore. 60 children were selected. Post test only control group design was used. Purposive sampling technique was used. Results shows that manual pressure on lumbar region was effective in reduction of pain during intra muscular injection.There was significant difference between experimental and control group . The scores were t=3.1 is greater than the tabulated value t= 2.0.Thus the findings revealed the manual pressure was effective.

**Illorsich et.al (2011)** A conducted quasi experimental study to determine the effectiveness of physical interventions in reducing pain during intramuscular injection in children at Canada. There were 66 children (6-18 yrs age) participated in this study. The method used was stroking the skin close to the injection site before

and during the injection.The result revealed that after the intervention there is a significant reduction of pain during vaccine administration (SMD = 0.53, P=0.03). The findings of the study suggest that the relaxation of the muscle will help in reducing the injection pain.

**Razek AA (2009)** Conducted a quasi experimental study to determine the effectiveness of breast feeding on pain relief during neonatal immunization injections at Jordan .infants were divided in to two groups. Pain responses of infants during and after the procedure was evaluated. Infants heart rate and duration of crying for both groups were calculated. Findings revealed that crying time was shorter in interventional (breast fed) group than the control group with a statistically significant difference in the duration of crying during and after immunization. The study concluded that breast feeding and skin to skin contact significantly reduced crying in infants receiving immunization .

**Mukash K (2009**) conducted a comparative study to assess the effectiveness of two distraction techniques in altering behaviour responses to pain among children (1-3 years) receiving immunization at canada. A randomised controlled trail was done to compare the acute pain response of infant during immunization by using a slow standard of care during injection versus rapid pragmatic technique in 113 infants (4-6 months). The intervention given for slow standard of care group was slow aspiration prior to injection slowly inject the vaccine and then slow withdrawal of needle . In pragmatic group, without aspiration rapidly inject the vaccine and withdraw the needle . Immediately infant pain was measured by the modified behaviour pain scale (MBPS) and visual analogue scale by patent. Mean MBPS score were higher for standard group (5-6) compared to pragmatic group (3-3) [$p<0.001$].Results revealed that the level of pain was more in standard Group infants than pragmatic Group infants.

**Kar SK Natu SA, Daga SR (2008)** Conducted a study to evaluate the efficacy of sucrose for the relief of pain associated with immunization injections in infants . A total of 50 healthy infants (mean age 3.3 ± 1.7 months) brought to the paediatric OPD of tertiary hospital for their routine 6, 10 and 14 week oral polio vaccine (OPV) and diphtheria pertusis tetanus (DPT) intramuscular immunization were the samples. The infants were randomized to receive2ml of of sucrose solution (75% w/v) or distilled water by mouth 2 ml (placebo) before the injection. A blinded

observer analyzed video recordings of each injection procedure to measure the duration of crying and to score the Modified Behavioral Pain Scale (MBPS), an infant pain assessment tool. The results of the study were a significant reduction in crying times and pain scores in the group receiving sucrose as against the controls. The MBPS score after injection for sucrose was 6.80 ± 0.71 vs. 7.24 ± 0.66 for controls (P=0.0344) by the Mann-Whitney U test. The study concluded that oral sucrose solution can be used as an analgesic in infants undergoing immunization by intramuscular injection.

**Section B :Studies related to Vaccination.**

**Celeblugiea a,Akpinar R B(2010 )** conducted an experimental study to compare pain responses of children who receive intramuscular (IM) vaccination in deltoid muscle versus the pain responses of those who receive Intra muscular vaccination in the vastus lateralis at Turkey. A total of 185 infants were randomly assigned to one of the two study groups. The deltoid group and the vastus lateralis group were vaccinated respectively in the deltoid muscle and the vastus lateralis. The results indicated that the pain response of infants were similar in study group & control group. Crying duration of the children who received the vastus lateralis vaccination was shorter than that of the deltoid group after the procedure.

**Raham m (2010)** A cross sectional study was conducted in 328 children aged between 12-35 months and their mothers were studied to identify the factors associated with delayed immunization of their children. Delayed immunization was associated with low socio-economic status, maternal illiteracy and lack of mother's knowledge on vaccine preventable diseases as recommended by the Expanded programme on immunization (EPI) The association of lack of mother's knowledge with no delayed Immunization persisted after adjusting the effects of others in logistic regression analysis( odd Ratio 16.7: 95% confidence interval 15.65- 17.8%: P< 0.0001) The results indicate that even in the presence of Maternal illiteracy, educating mothers about the vaccines and vaccine preventable diseases will change the attitude among mothers to immunize their children.

**Dilek Dilli et.al ( 2009)** conducted an experimental study to reduce Pain during Vaccination in Infancy at Children's Hospital of Eastern Ontario. A consecutive sample of 243 children between age 0 and 48 months receiving their routine vaccinations was randomly assigned to one of the study groups. A total of 158 infants under age 6 months were randomly assigned to breast-feeding or no breast-feeding during immunization, and 85 children age 6 to 48 months were randomly assigned to receive 12% sucrose solution, lidocaine-prilocaine cream, or no intervention. Results indicates Breast-feeding in infants under age 6 months and use of sucrose or lidocaine-prilocaine in children age 6 to 48 months significantly reduced crying time and pain scores were compared with control group. No difference in outcome was seen between the sucrose and lidocaine-prilocaine treatment groups. Breast-feeding may have an analgesic effect up to age 6 months and that in older children, both sucrose and lidocaine-prilocaine reduce vaccination pain.

**Rahul sharma, sanjiv k bhasin (2008),** conducted a study to assess the knowledge about routine immunization among 682 caretakers of young children at India. caretakers accompanying children under 5 years to pulse polio booths pre-tested with semi-open-ended questionnaire.Results shows that the proportions of respondents who had awareness about different aspects of routine immunization, such as weekday of routine immunization (37.0%), age group for routine immunization (49.1%), number of visits required in the first year of life (27.0%), were all low.

**Neil l (2007)**A comparative study was conducted to assess the intensity of pain among infants receiving BCG and DPT vaccination.A total of 250 subjects, 125 infants and 125 infants were injected BCG and DPT at 90° or 40° with or without a pinched skin fold respectively.Injection depth was assessed via ultrasonography. Subjects rated pain on a visual analog scale. Among infants, 4% of injections were intramuscular and 1.5% was subcutaneous. Subcutaneous fat thickness was the primary predictor of the likelihood of IM injections ($p<0.001$).This study reported that infants experiencing more pain during DPT vaccination by IM injection to compared to infants receiving BCG by subcutaneous.

**Piira T(2007)** conducted an observational study to determine infant pain response during immunization injection and the proximal influences of parental and nurse coping-promoting statements within the treatment at Australia . Pain responses in 93 infants receiving an immunization injection were videoed and coded using the Neonatal Facial Coding System (NFCS) and duration of crying was recorded. Parent and nurse vocalizations were coded using the Child–Adult Medical Procedure Interaction Scale. A multiple regression analysis evaluated the influence of the 5 distal and 2 proximal factors on NFCS scores, and found parental coping-promoting statements in the 30 s period before the injection to have the strongest effect on facial pain response ($p < 0.01$). The findings suggest that parental behavior in the treatment room has a key role in influencing the response of infants to painful procedures.

**Efe.E & Ozer .z( 2007)** Conducted a study to examine the pain relieving effect of breastfeeding during immunization in healthy neonates. 66 healthy infants returning to a clinic for their $2^{nd}$, $3^{rd}$ or $4^{th}$ month immunization with intramuscular diphtheria, tetanus, and pertusis were randomized to be breastfed before, during, and after the injection or to be given the injection according to routine clinic procedure (no breastfeeding). To assess the pain responses of the neonates during and after immunization, they noted their heart rates, oxygen saturation levels, and length of crying. The crying time was shorter in the experimental (breastfeeding) group (M ± SD duration, 35.85 ± 40.11 seconds) than in the control group (M ± SD duration, 76.24 ± 49.61 seconds; p = .001). The heart rate and oxygen saturation levels were almost the same in both groups. They concluded that breastfeeding, maternal holding, and skin-to-skin contact significantly reduced crying in infants receiving an immunization injection.

**Ibrahim h al-ayed (2005),** conducted a study on the knowledge and practice of physicians and nurses with regard to immunization at Riyadh city.A self-administered questionnaire with 50 statements related to knowledge and practice of vaccination was distributed among workers in 50 MOH PHCs in Riyadh city. 479 Question were analysed. The response rate was almost 70% most of the statements cited a correct response of knowledge & practice was obtained from more than 80% of the sample. However for few others, correct response has dropped to 40% or less. Experience in dealing with vaccination, and a formal training in vaccination were not

significantly associated with the responses of both physicians and nurses. Inspite of the limitations of this study it could be fairly concluded that the overall knowledge and practices of childhood immunizations among the primary care providers surveyed was good. Significant gaps still exist.

**Section C: studies related to pharmacological pain reduction technique during injection.**

**Saeliw P. et al (2010)** A conducted study to evaluate the effects of ice application on patient comfort before and after injection at Thailand. . The sixty adolescent patients were underwent botulinum toxin A treatment were divided into three groups, group 1 had ice applied 5 minutes before the injection, group 2 ice was applied 5 minutes after the injection, and group 3 served as a control, receiving an injection without ice application. A numeric pain distress scale was used to assess pain intensity. Using an ice application 5 minutes before or after injection showed no difference but both significantly reduce pain compared to without ice application, while 5-minute application before injection had significantly decreased the bleeding compared to both 5 minutes after injection and without ice application. The ice application is helpful in pain relief whereas the before-injection has lesser bleeding than after-injection modality.

**Georg J. (2007)** conducted a study in St. John's medical college at Bangalore, to determine the effectiveness of Helfer skin tap technique on pain during intramuscular injection among adult patients. There were 60 subjects received four injections in which two injections with standard technique and two injection with helfer skin tap technique. Pain assessment was done by 6-10 numerical intensity pain scale. The mean pain score using Helfer skin tap technique (15+/- 1.1) was less than the pain scored by standard technique (2.9 +/- 1.9)·The pain level was significantly reduced in treatment group($p<0.001$)

**Section D: studies related to Ice application during vaccination.**

**Jisy jose & umarani( 2013)** Conducted a study to assess the effect of iceapplication in reducing pain perception of toddlers during immunization at india. Convenience sampling technique was used to select the toddler .post test only design was adopted *using* FLACC behavioural pain assessment scale.The results shows that mean pain score 3.4±1.15 of children who had received ice application prior to immunization was much less than the children who had received immunization without ice application 7.4 ±0.72.The study revealed that the ice application was effective in minimizing the pain in toddlers

**Saini b, paul p. (2011 )**A quasi experimental study was conducted to assess the effectiveness of cold application, heparinoid application and magnesium-sulphate application on superficial thrombophlebitis among patients in the selected hospitals at Indore. Three-group of pre test and post test design was adopted for the study. 45 patients were selected using purposive sampling and they were randomly assigned into three groups. The finding of the study indicated that the computed't' value of cold application group is 14.33, heparinoid application group is 11.90 and magnesium sulphate application group is 20.82 were statistically significant, which suggested that all three interventions were effective in reducing the signs and symptoms of superficial thrombophlebitis. The computed 'F' ratio of all the three groups ('$F'_{2.42}$ =10.10) showed that three types of application differ significantly. This study concluded that magnesium sulphate application is the most effective intervention in reducing the superficial thrombophlebitis.

**Ebner (2009)**A conducted a quasi experimental study was conducted to determine whether cold therapy decrease the perceived pain associated with IM injection in children. Sample of 40 children with age 10 to 80 years was randomly assigned to control and experimental group. The experimental group had an ice pack placed on the injection site for 15 minutes prior to injection and control group with normal routine care. Children who receive cold therapy showed significant reduction in IM injection pain.

**Vishwambaran N(2009** Conducted an interventional study to evaluate the effectiveness of ice packs versus thrombophobe gel for reducing intra venous infiltration in patients admitted in the paediatric wards in Mangalore. The study was conducted on 40 samples (20 for thrombophobe gel group and 20 for ice cube group) and sample were selected using purposive sampling technique. The infiltration was assessed by using modified infiltration scale. The results showed that before the treatment, majority (65%) of patients had grade two infiltrations after the treatment with thrombophobe and 100% of patient's infiltration had reduced to grade one infiltration. In group two majorities (80%) had grade two infiltrations after the treatment with ice cube 100% had grade one infiltration. The study concluded that both thrombophobe gel and ice pack are effective in reducing intravenous infiltration among the paediatric patients.

**Ali fakhr M (2006 )**conducted a study onto determine effect of local refrigeration prior to veinpuncture on pain related responses in school age children Iran.purposive sampling technique was used .80 children were selected from 6 to 12 years of old were divided into two equal groups .Physiological response were measured prior to venipuncture at two time point refrigrated by an ice bag for 3 minutes and procedural was performed immediately. The behavioural response were measured CHEOPS behavioral pain scale. Results shows that no significant difference between the two groups for physiological responses before and after procedure. However behavioural responses during and after the procedure (p=0.0011)and subjective responses after procedure (p=0.0097)were significantly lower.the findings of the study suggest that the use of local refrigeration prior to venipuncture can be considered an easy and effective intervention of reducing veinpuncture.

# CHAPTER III

# METHODOLOGY

# CHAPTER III

# RESEARCH METHODOLOGY

This chapter deals with the methodology adapted to this study. It includes Research approach, Research design, Variables, Settings, Population, Sample, Sample size, Sampling technique, Criteria for sample selection,Description of tool, Description of intervention, Content validity, Reliability, Pilot study, Procedure for data collection, Plan for data analysis, and protection of human rights.

## Research Approach

The Quantitative research approach has been used in this study.

## Research Design

The study utilized post test only control group design.

| GROUP | PRETEST | INTERVENTION | POSTTEST |
|---|---|---|---|
| Experimental | - | X | O1 |
| Control | - | | O2 |

O1 -Assessment of post test level of pain perception among children in study group.
X - Ice application over the site of injection for 30 seconds.
O2 - Assessment of post test level of pain perception among children in control group.

**Variables**

Independent variable - Ice application.

Dependent variable - Pain perception.

**Settings**

The study was conducted in Gerdi Gut Perle Agasthiyar Muni Child Care Centre, Vellamadam. which is 120 beded hospital. It is situated at a distance of 20 km from St Xavier's Catholic College Of Nursing, Chunkankadai, Nagercoil. The study was also conducted in Dr. Jeyaharan memorial hospital, Nagercoil which is 95 bedded hospital situated at a distance of 7km from St Xavier's Catholic College Of Nursing, Chunkankadai, Nagercoil. The researcher selected 60 samples who were willing to participate in the study from Agasthiyar Muni and Dr. Jeyaharan hospital for study group and control group.

**Population**

**Target Population**

The population under study constituted all children receiving DPT booster vaccination.

**Accessible Population**

Children receiving DPT vaccine in Gerdi Gut Perle Child care Agasthiyar muni child care centre and Dr. Jeyaharan hospital in Kanyakumari District.

**Sample**

Children receiving DPT booser vaccination. Who fulfilled the inclusion and exclusion criteria .

**Sample Size**

The sample size is 30 study group and 30 contol group.

**Sampling Technique**

Purposive sampling technique was used to select the samples for the study.

**Criteria For Sample Selection**

**Inclusion Criteria**

Children who are receiving DPT booster vaccination.

Children between the age group of 15 to 18 months.

**Exclusion Criteria**

Children who were mentally challenged and cerebral palsy as diagnosed by physician.

Children with mild to moderate illness such as fever.

**Description Of Tool**

The tool used in this study consists of two parts

**Part-I**

Demographic variables consists of gender of the child, supportive system, status of the child during vaccination, weight of the child, experience of injecting nurse and previous pain perception.

**PART-II**

Wong Becker's faces pain assessment scale.

| | |
|---|---|
| NO HURT | 0 |
| HURTS LITTLE BIT | 2 |
| HURTS LITTLE MORE | 4 |
| HURTS EVEN MORE | 6 |
| HURTS WHOLE LOT | 8 |
| HURTS WORST | 10 |

**Description For Intervention**

The investigator applied ice cubes over the site of injection for 30 seconds with the help of gauze piece immediately before vaccinating the child. Then the level of pain perception was assessed with the help of Wong Becker's pain rating scale.

**Content Validity**

The content validity of the tool was ascertained by the expert opinion from 2 medical practitioners and 3 nursing experts. The experts gave their opinions and suggestions for further modification of items to improve the clarity and content of the question. The formal tool was prepared as per the suggestion and advice given by the experts.

**Pilot Study**

Pilot study was conducted in Muhunthan hospital, Manavalkurichy ,after receiving a formal approval from the director of the institution. The pilot study was conducted among 6 children 3 in study group and 3 in control group .Data was analyzed by using descriptive and inferential statistics. The tool was reliable and pain scoring were found feasible and practicable. No changes were made after pilot study and investigator proceeded for main study.

**Reliability**

Inter-rater reliability test was done and the calculated value was 0.82 which concluded that the tool was highly reliable.

**Procedure For Data Collection**

After obtaining formal approval from the principal, the investigator proceeded with the data collection. The investigator selected children aged between 15 to 18 months according to the inclusion criteria. The investigator introduced herself and established rapport with the child as well as the parents and assured that the information will be confidential.

The children were selected using purposive sampling technique for both study group and control group. For the study group, the investigator applied ice over the site of injection for 30 seconds immediately prior to vaccination. Then the level of pain perception was assessed using Wong Becker's pain rating scale. For the control group, ice application was not given, but the level of pain perception was assessed using Wong Becker's pain rating scale.

**DATA COLLECTION PERIOD, NUMBER OF SAMPLES AND METHOD OF SAMPLE SELECTION**

| S.No | Date | Number of samples | | Method of sample selection |
|---|---|---|---|---|
| | | Study group | Control group | |
| 1 | 17-06-2013 | 2 | 1 | Purposive Sampling technique |
| 2 | 18-06-2013 | 1 | 1 | |
| 3 | 19-06-2013 | 1 | 1 | |
| 4 | 20-06-2013 | 1 | 2 | |
| 5 | 21-06-2013 | 2 | 1 | |
| 6 | 24-06-2013 | 1 | 2 | |
| 7 | 25-06-2013 | 2 | 2 | |
| 8 | 26-06-2013 | 3 | 1 | |
| 9 | 27-06-2013 | 1 | 2 | |
| 10 | 28-06-2013 | 3 | 1 | |
| 11 | 01-07-2013 | 1 | 3 | |
| 12 | 02-07-2013 | 2 | 1 | |
| 13 | 03-07-2013 | 1 | 2 | |
| 14 | 04-07-2013 | 2 | 2 | |
| 15 | 05-07-2013 | 1 | 1 | |
| 16 | 08-07-2013 | 1 | 1 | |
| 17 | 09-07-2013 | 2 | 1 | |
| 18 | 10-07-2013 | 2 | 1 | |
| 19 | 11-07-2013 | 1 | 2 | |
| 20 | 15-07-2013 | - | 1 | |
| 21 | 16-07-2013 | - | 1 | |

**Plan For Data Analysis**

Data collected was analyzed using both descriptive and inferential statistics such as mean, standard deviation, chi square, and unpaired T test.

**Descriptive Statistics**

Frequency and percentage distribution was used to analyze the demographic variables and to assess the level of vaccination pain.

Mean and standard deviation was used to assess the effectiveness of ice application among on vaccination pain level among children receiving vaccination.

**Inferential Statistics**

Unpaired ‘t’ test was used to compare post test level of pain on control group and experimental group.

Chi-square was used to find out the association of post test level of pain in immunization children between the experimental and control group with their selected demographic variables.

**Protection Of Human Rights**

The proposed study was conducted after the approval of the dissertation committee of St. Xavier’s Catholic College of Nursing on 27-12-2012. Permission was obtained from the Gerdi Gut Perle Agasthiar Muni Child Care Centre, Vellamadam and Dr. Jeyaharan Memorial Hospital. Verbal consent was obtained from each subject before starting the data collection. Assurance was given to the mothers regarding the confidentiality of the data collected.

# CHAPTER IV

# DATA ANALYSIS AND INTERPRETATION

# CHAPTER IV

## DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected about pain perception among vaccinated children. The data collected from the samples were tabulated, analyzed and presented in the tables and interpreted under the following sections based on the objectives and hypotheses of the study. This chapter is divided into three sections.

Section A: Distribution of children according to the selected demographic variables in Study group and control group.

Section B: Distribution of children in Study group and control group according to the level of pain after vaccination.

Section C: Testing hypotheses.

1. Compare the post test level of pain perception among children receiving vaccination in Study group and control group

2. Find out the association between the level of pain perception among children with selected demographic variables in Study group and control group.

## SECTION A

**DISTRIBUTION OF CHILDREN ACCORDING TO THE SELECTED DEMOGRAPHIC VARIABLES IN STUDY GROUP AND CONTROL GROUP.**

**Table 4.1: Frequency and percentage distribution of samples according to the selected demographic variables**

**N=60**

| S.No | Demographic Variables | Study Group (n=30) | | Control Group (n=30) | |
|---|---|---|---|---|---|
| | | F | % | f | % |
| 1 | Gender of the child | | | | |
| | male | 15 | 50 | 13 | 43.3 |
| | female | 15 | 50 | 17 | 56.7 |
| 2 | Supportive system | | | | |
| | Father | 4 | 13.3 | 7 | 23.3 |
| | Mother | 22 | 73.4 | 12 | 40 |
| | Relation | 4 | 13.3 | 11 | 36.7 |
| | others | - | - | - | - |
| 3 | Status of the child during vaccination | | | | |
| | sleepy mood | 1 | 3.3 | 1 | 3.34 |
| | Anxious | - | - | 2 | 6.6 |
| | Diverted | - | - | 6 | 20 |
| | Awakened | 29 | 96.7 | 21 | 70 |

| | | | | | |
|---|---|---|---|---|---|
| 4 | Experience of the injecting nurse | | | | |
| | Above 2 years | - | - | - | |
| | 2 to 4 years | - | - | - | |
| | 4 to 6 years | 4 | 13.3 | 16 | 53.3 |
| | Above 6 years | 26 | 86.7 | 14 | 46.7 |
| 5 | Weight of the child | | | | |
| | Less than 10 kg | 5 | 16.7 | 12 | 40 |
| | 10 to 12 kg | 23 | 76.7 | 18 | 60 |
| | 13 kg 14 kg | 2 | 6.6 | - | - |
| | Above 15 kg | - | - | - | - |
| 6 | Previous pain perception experience | | | | |
| | Yes | 30 | 100 | 30 | 100 |
| | No | - | - | - | - |

Distribution of samples according to the gender of the child shows that in Study group ,15 (50%) of them were male children,15 (50%) of them were female children. In control group, 13 (43.3%) of them were male children. 17 (56.7 %) of them were female children.

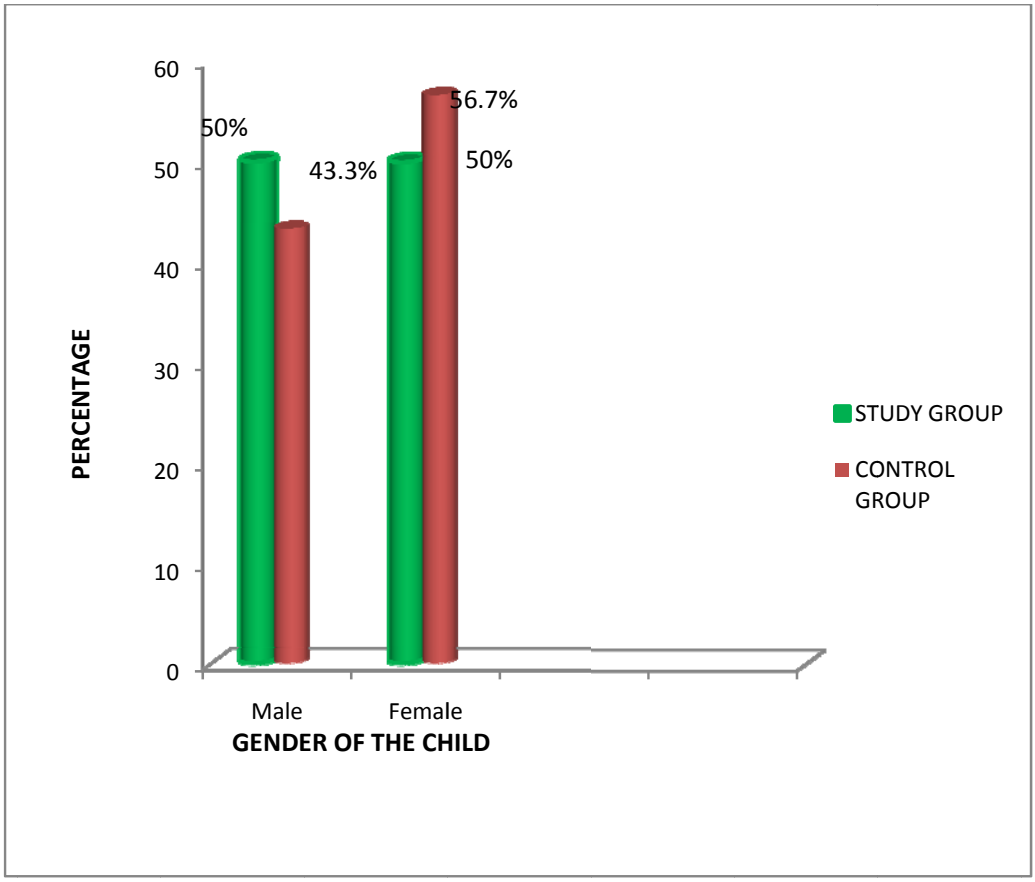
Distribution of samples according to supportive system shows that in Study group, 4 ( 13.3%) of them get support from father, 22 (73.4%) from mother, 4(13.3%) from relation and none of them from others. In control group, 7 (23.3%) of them get support from father, 12 (40%) from mother,11 (36.7%) from relation and none from others.

Distribution of samples according to the status of the child during vaccination shows that in Study group, 1(3.3%) of them had a sleepy mood, none of the children were anxious and diverted, 29 (96.7%) of them were awakened. In control group, 1 (3.34%) of them had a sleepy mood, 2(6.6%) of them were anxious, 6 (20 %) of them were diverted, 21 (70%) of them were awakened.

Distribution of samples according to the Experience of the injecting nurse shows that in Study group, none of them had experience less than 2 years and 2 to 4 years, 4 (13.3%) of them had 4 to 6 years of experience, 26 (30%) of them had above 6 years experience. In control group , none of them had experience less than 2 years and 2 to 4 years, 16 (53.3%) of them had 4 to 6 years experience, 14 (46.7%) of them had above 6 years of experience.

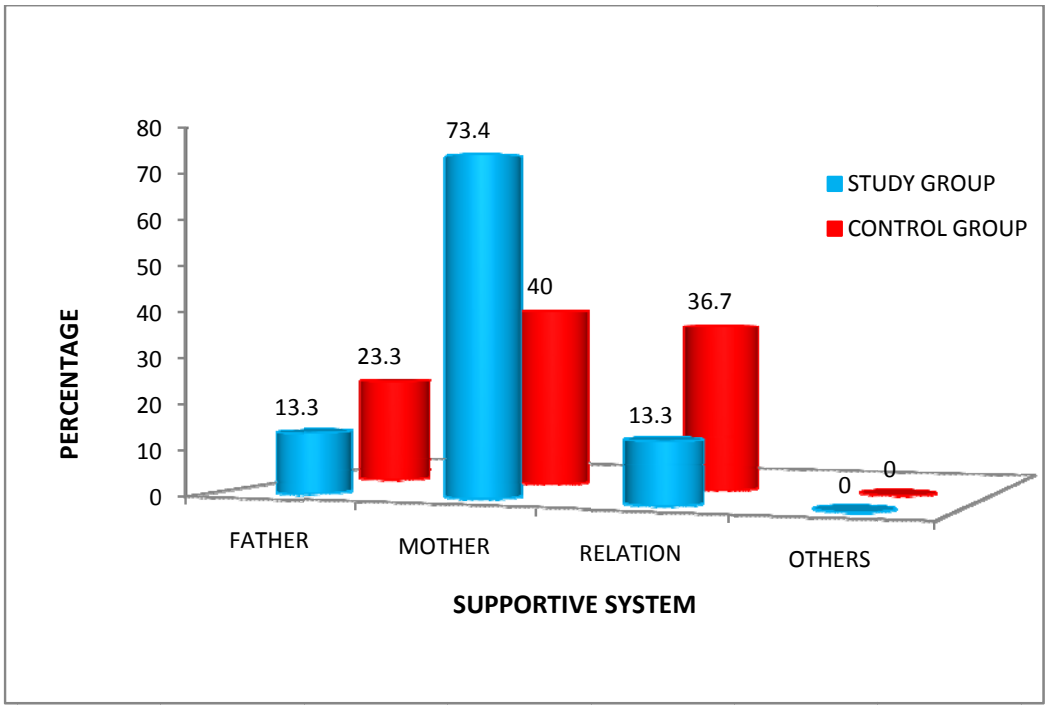
Distribution of samples according to weight of the child shows that in Study group,5 (16.7%) of them were less than 10 kg, 23 (76.7%) of them were between 10 kg to 12kg, 2 (6.6%) of them were between 13 to14 kg and no one was above 15 kg. In control group, 12 (40%) of them from less than 10 kg,18 (60%) of them were from 10 kg to 12kg, none of them were from 13 to 14 kg and above 15 kg.

Distribution of samples according to previous pain perception experience shows that in Study group, 30 (100%) of them had previous pain experience, and none of them were without previous pain perception. In control group 30 (100%)of them had previous pain experience, and none of them were without previous pain perception.



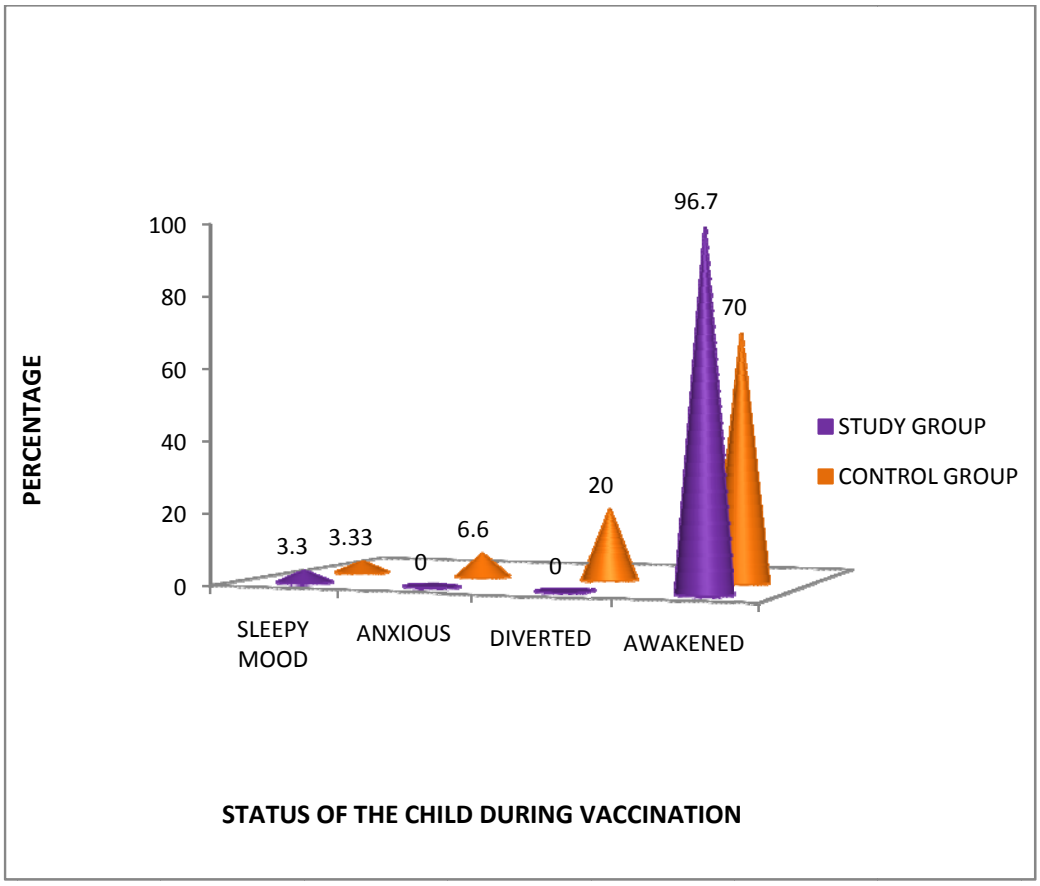

**Distribution of children according to gender of the child**

**Figure 4.1**



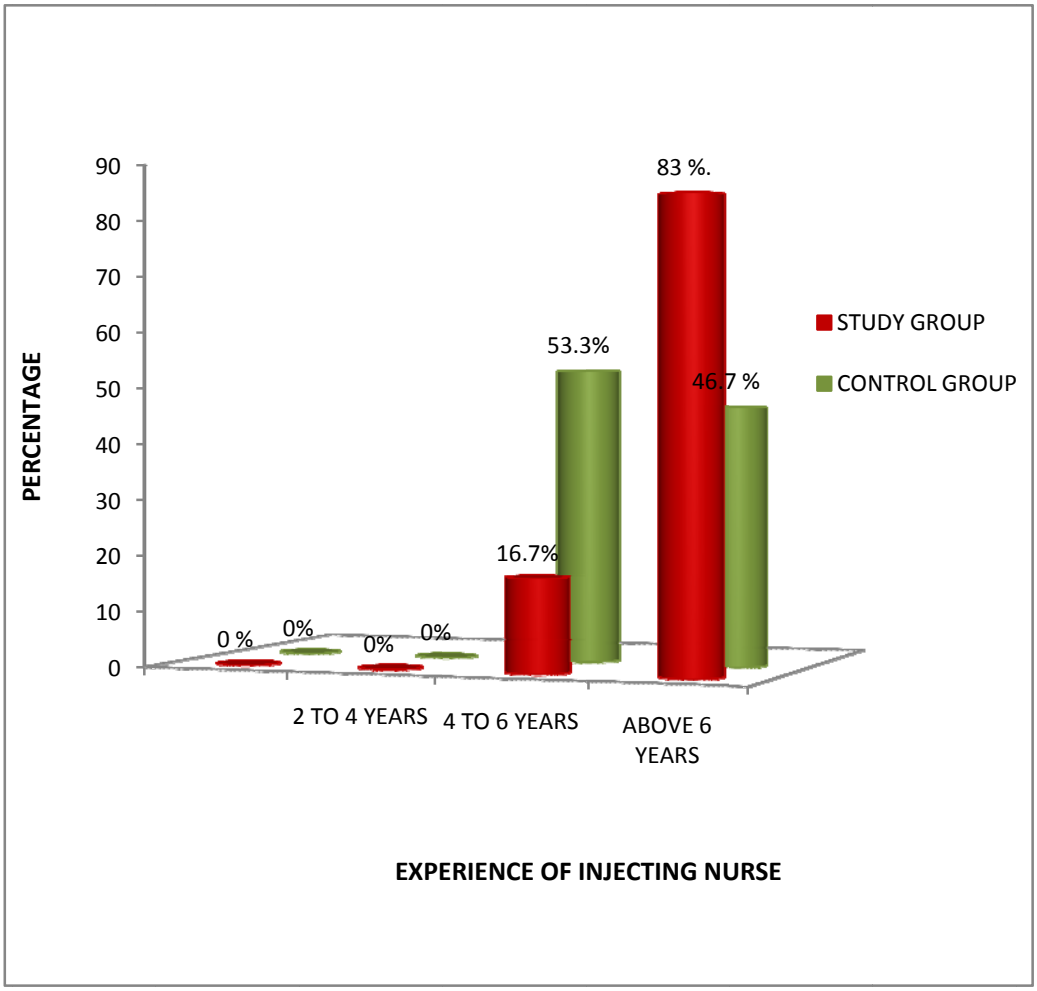

**Distribution of children according to supportive system**

**Figure 4.2**



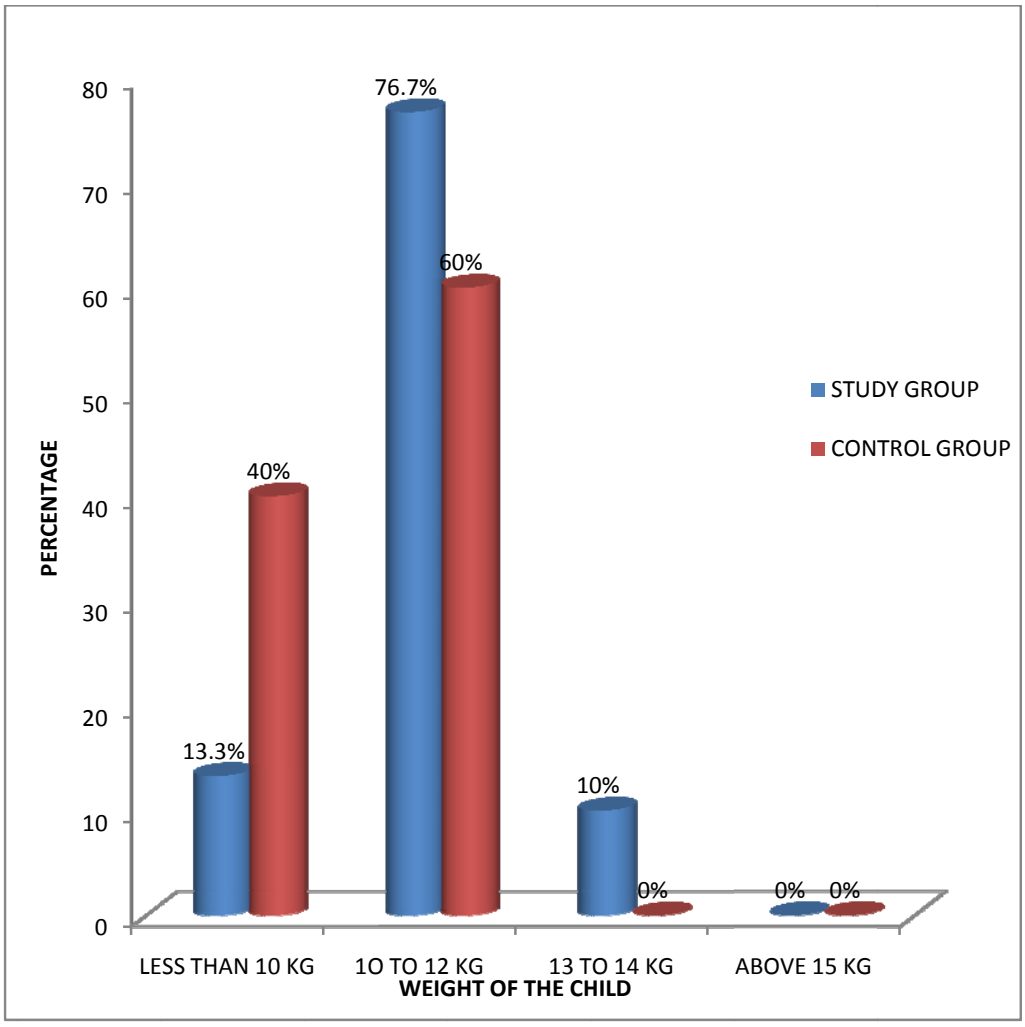

**Distribution of children according to status of the child during vaccination**

**Figure 4.3**



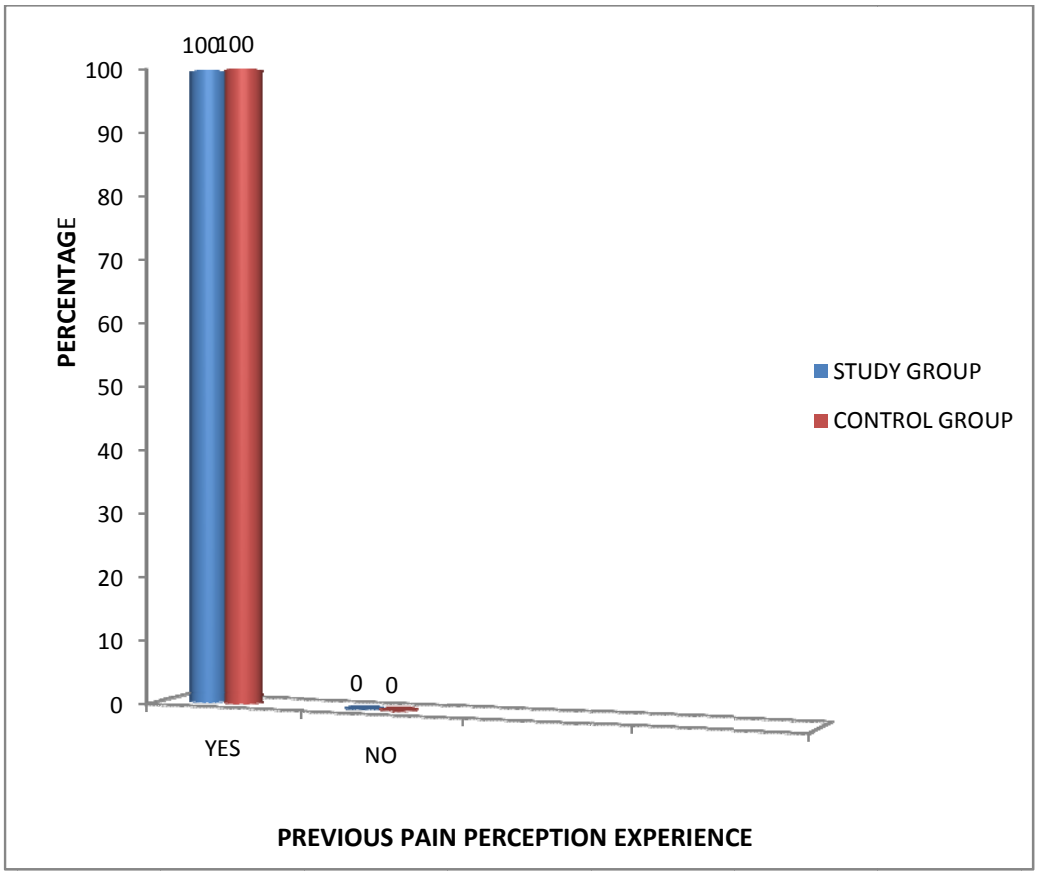

**Distribution of children according to experience of injecting nurse**

**Figure 4.4**




**Distribution of children according to weight of the child**

**Figure 4.5**




**Distribution of children according to previous pain perception experience**

**Figure4.6**

## SECTION B

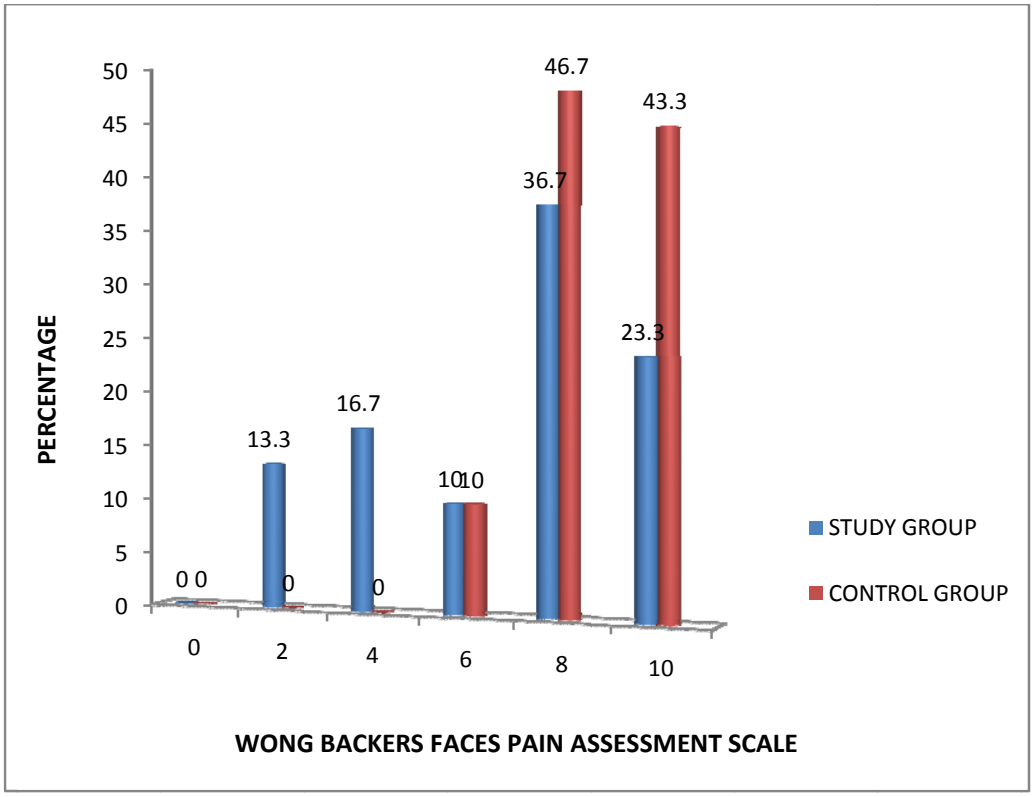
### I. DISTRIBUTION OF CHILDREN IN STUDY GROUP AND CONTROL GROUP ACCORDING TO THE LEVEL OF PAIN AFTER VACCINATION.

**Table 4.2: Frequency and percentage distribution of children according to the level of pain in Study group and control group.**

**N=60**

| S. No | Level of pain | Pain level | | | |
|---|---|---|---|---|---|
| | | Study group n=30 | | control group n=30 | |
| | | f | % | f | % |
| 1. | No hurt | - | - | - | - |
| 2. | HURTS LITTLE BIT | 4 | 13.3 | - | - |
| 3. | HURTS LITTLE MORE | 5 | 16.7 | - | - |
| 4. | HURTS EVEN MORE | 3 | 10 | 3 | 10 |
| 5. | HURTS WHOLE LOT | 11 | 36.7 | 14 | 46.7 |
| 6. | HURTS WORST | 7 | 23.3 | 13 | 43.3 |

Table 4.2 represents, in Study group 4 (13.3 %) of the children had pain that hurts little bit, 5 (16.7%) had pain that hurts littlemore, 3 (10%) had pain that hurts even more, 11(36.7%) had pain that hurts whole lot and 7 (23.3) had pain that hurts worst. In the control group 3 (10) had of them pain that hurts even more,14 (46.7%)had pain that hurts whole,13 (43.3) had pain that hurts worst.




**Distribution of children according to the post level of pain in control group.**

**Figure 4.7**

## SECTION C

### 1.COMPARE THE POST TEST LEVEL OF PAIN AMONG STUDY GROUP AND CONTROL GROUP.

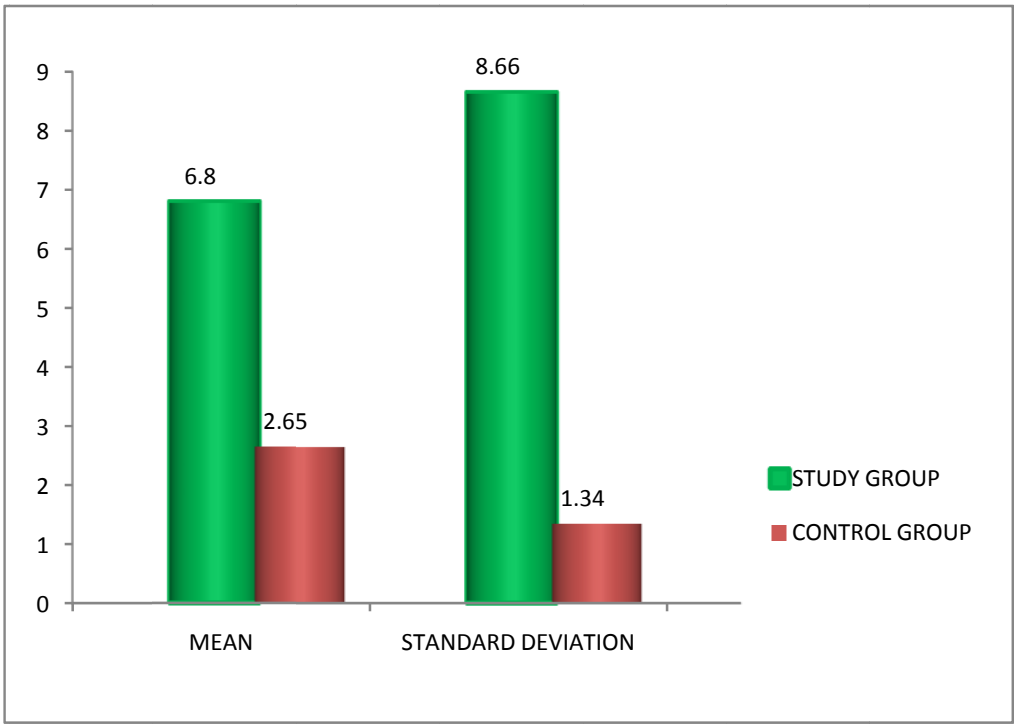
**Table:4.3 Comparison of Means, standard deviation and 't' value of post test level of pain among Study group and control group.**

**N=60**

| S. No | Group | Mean | SD | df | Independent 't' |
|---|---|---|---|---|---|
| 1. | Study group | 6.8 | 2.65 | 58 | 5.96 |
| 2. | Control group | 8.66 | 1.34 | | |

Table value t=1.67, *Significant at p<0.05 level.

Table 4.3 shows that for level of pain in Study group the mean value is 6.8,the standard deviation was 2.65 and control group the mean value is 8.66, the standard deviation was 1.34 and 'T' value is 5.9




**Comparison of post test level of pain among Study group and Group.**

**Figure 4.8**

## ASSOCIATION BETWEEN THE POST TEST LEVEL OF PAIN IN STUDY GROUP AND CONTROL GROUP WITH SELECTED DEMOGRAPHIC VARIABLES.

**Table 4.4: Association between the post test level of pain in Study group and control group with selected demographic variables.**

**N=60**

| S.No | Demographic variables | Study group n=30 | | | control group n=30 | | |
|---|---|---|---|---|---|---|---|
| | | df | Chi-square | Table value | df | Chi-square | Table value |
| 1 | Gender of the child | 5 | 33.5 | 11.07 | 5 | 0.157 | 11.07 |
| 2 | Supportive system | 15 | 8.9 | 24.996 | 15 | 1.397 | 24.996 |
| 3 | Status of the child during vaccination | 15 | 0.92 | 24.996 | 15 | 14.31 | 24.996 |
| 4 | Experience of the injecting nurse | 15 | 13.95 | 24.996 | 15 | 1.5 | 24.996 |
| 5 | Weight of the child | 15 | 1.12 | 24.996 | 15 | 2.09 | 24.996 |
| 6 | Previous of pain perception | 5 | 0 | 11.07 | 5 | 0 | 11.07 |

Table 4.4 shows that in Study group, on considering the Gender of the child, the chi-square value was 33.5, the table value at degrees of freedom 5 was 11.07. As per supportive system the chi-square value was 8.9, at degrees of freedom 15 ,the table value was 24.996. On considering the status of the child during vaccination the chi-square value was 0.92 at degrees of freedom 15, the table value was 24.996. As per experience of the injecting nurse the chi-square value was 13.95, at degrees of freedom 15 the table value was 24.996. As per Weight of the child the chi-square value was 1.12 at degrees of freedom 15 the table value was 24.996, As per Previous pain perception the chi-square value was 0 at degrees of freedom 5 the table value was 11.07.

Table 4.4 shows that in control group, on considering the gender of the child, the chi-square value was 0.157 at degrees of freedom 5, the table value was 11.07 As per supportive system the chi-square value was 1.397, at degrees of freedom 15 the table value was 24.996. On considering the status of the child during vaccination the chi-square value was 14.31 at degrees of freedom 15, the table value was 24.996. As per experience of the injecting nurse the chi-square value was 1.5, at degrees of freedom 15 the table value was 24.996. As per the weight of the child the chi-square value was 2.09 at degrees of freedom 15 the table value was 24.996, As per Previous pain perception the chi-square value was 0 at degrees of freedom 5 the table value was 11.07.

# CHAPTER V

# DISCUSSION

# CHAPTER V

# DISCUSSION

This study was done to evaluate the effectiveness of ice application on pain perception among children receiving vaccination in selected Hospital of Tamilnadu. The finding of the study has been discussed with the reference to the objectives.

**Demographic Profile Of The Samples**

In study group according to the gender of the child,15 (50 %) of them were male children,15 (50%) of them were female children. In control group, 13 (43.3%) of them were male children. 17 (56.7 %) of them were female children.

According to supportive system in Study group, 4 ( 13.3%) of them get support from father, 22 (73.4) from mother, 4(13.3%) from relation and none of them from others. In control group, 7 (23.3%) of them get support from father, 12 (40%) from mother, 11 (36.7%) from relation and none from others.

Regarding the status of the child during vaccination, in Study group, 1(3.3%) of them had a sleepy mood, none of the children were anxious and diverted, 29 (96.7%) of them were awakened. In control group, 1 (3.34%) of them had a sleepy mood, 2(6.6%) of them were anxious, 6 (20 %) of them were diverted, 21 (70%) of them were awakened.

According to the experience of the injecting nurse in Study group, none of them had experience less than 2 years and 2 to 4 years of experience, 4 (13.3%) of them had 4 to 6 years of experience, 26 (30%) of them had above 6 years of experience. In control group, none of them had experience above 2 years or 2 to 4 years , 16 (53.3%) of them had 4 to 6 years experience, 14 (46.7%) of them had above 6 years of experience.

According to weight of the child in Study group, 5 (16.7%) of them were less than 10 kg, 23 (76.7%) of them were from10 kg to 12kg, 2 (6.6%) of them were from 13 to 14 kg, and no one was above 15 kg. In control group, 12 (40%) of them were less than 10 kg,18 (60%) of them from 10 kg to 12kg, none of them were from 13 to 14 kg or above 15 kg.

In study group according to previous pain perception experience 30 (100%) of them falls under the category of having previous pain experience, and none of them were under the category of not having any not had any previous pain perception. In control group 30 (100%) of them had previous pain experience, and none of them were under the category of not previous pain perception.

**The first objective was to assess the post test level of pain perception among children receiving vaccination in study group and control group.**

In study group 4 (13.3 %) children come under the category of pain that hurts little bit, 5 (16.7%) children had pain that hurts little more, 3 (10%) children had pain that hurts even more, 11(36.7%) children had pain that hurts whole lot,7 (23.3%) children had pain that hurts worst. In control group 3 (10) children had pain that hurts even more, 14 (46.7%) children pain that hurts whole, 13 (43.3) children pain that hurts worst.

The investigator adapted Kaherine Kolcaba's Comfort Theory (1992) to conceptualize this study. According to this theory, the nurse has to satisfy the comfort needs of the patient. The children undergoing vaccination will be having more pain perception.

**The second objective was to evaluate the effectiveness of ice application on pain perception among children receiving vaccination in study group**.

In study group the mean score on post test level of pain among vaccinated children was 6.8, and in control group the mean score on post test level of pain in vaccinated children was 8.66. The unpaired 't' test value was5.9 which was significant at $p < 0.05$. Hence the research hypotheses (H1) is accepted.

The nurse has to comfort the child by providing certain interventions. The first step is to assess the health care needs. The researcher identified that there will be pain for children while receiving vaccination.

**The third objective was to find out the association between the level of pain perception among children with selected demographic variables in study group and control group.**

The findings showed that there was no significant association between the post test level of pain among children receiving vaccination in study group and control group with their gender of the child, supportive system, status of the child during vaccination, experience of the injecting nurse, weight of the child and previous pain perception, at $p<0.05$ level. Hence hypotheses H2 is not accepted.

The study was supported by a Shanthi Kumari. S conducted to assess the effectiveness of ice application on pain reduction prior to immunization among infants in a selected hospital, Bangalore. 30 infants were randomly assigned to two groups for an intervention treatment of ice application. The study finding revealed that majority (80%) of the children in study group had mild pain level after ice application. The mean (8.43) and standard deviation (1.30) of Study group when computed with mean (16.97) and standard deviation of (1.22). The control group revealed that the calculated 't' value 26.19 was greater than the table value. Thus, the study findings revealed that there was a high statistical significant difference in level of pain among children between study group and control group at $p<0.001$ level of significance.

The investigator selected the ice application as an intervening variable to reduce the pain perception. The post test pain level was assessed using Wong Baker's faces rating scale in experimental group. The investigator didn't apply ice for the children in control group, but assessed the level of pain for those children. The children who received ice application had low level of pain perception which was revealed in statistical analysis. Hence the goal of the investigator was achieved.

# CHAPTER VI

# SUMMARY, CONCLUSION, NURSING IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

# CHAPTER VI

# SUMMARY, CONCLUSION, NURSING IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

In this chapter, summary, conclusion, nursing implications to nursing practice, limitations and recommendations for further study are presented.

## Summary

Quasi experimental group, post test only control group design ,was used in this study to determine the effectiveness of ice application on pain perception in Study group to evaluate the effectiveness of ice application on pain perception among children receiving vaccination. The conceptual framework for the study was based on Kol caba Comfort Theory. The study was conducted in Gurdi Gutt Peril Hospital at Vellamadam and Dr. Jeyaharan Memorial Hospital. The sample size was 60 and the samples were selected by purposive sampling technique, 30 in study group and 30 in control group. Wong Backers faces pain scale was used to rate the intensity of pain. The collected data were analyzed using descriptive and inferential statistics. To test the hypothesis, unpaired ‘t’ and chi-square test were used.

## Finding Of The Study

The major findings of the study is summarized as follows. Among 30 samples in study group, according to the gender of the child, 15 (50 %) of them were male children ,15 (50%) of them were female children. According to supportive system, 4 (13.3%) of them got support from father, 22 (73.4%) from mother, 4(13.3%) from relation and none of them from others. Regarding the status of the child during vaccination, 1 (3.3%) of them had a sleepy mood, none of the children were anxious and diverted, 29 (96.7%) of them were awakened. According to the experience of the injecting nurse, none of them had less than 2 years and 2 to 4 years of experience, 4 (13.3%) of them had 4 to 6 years of experience, 26 (30%) of them had above 6 years of experience. According to weight of the child in Study group,5 (16.7%) of them

were less than 10 kg, 23 (76.7%) of them were about 10 kg to 12kg, 2 (6.6%) of them were about 13 to 14 kg and no one was above 15 kg. According to previous pain perception experience, 30 (100%) of them had previous pain experience,and none of them were without previous pain perception.

Among 30 samples in control group, 13 (43.3%) of them were male children. 17 (56.7 %) of them were female children. 7 (23.3%) of them get support from father , 12 (40%) of them from mother,11 (36.7%) of them from relation and none of them from others. 1 (3.34%) of them had a sleepy mood , 2(6.6%) of them were anxious,6 (20 %) of them were diverted, 21 (70%) of them were awaken. Regarding experience of injecting nurse or none of them had above 2 years and 2 to 4 years of experience, 16 (53.3%) of them had 4 to 6 years experience, 14 (46.7%) of them had above 6 years of experience. About the weight of the children 12 (40%) of them were less than 10 kg,18 (60%) of them from 10 kg to 12kg, none of them were from 13 to 14 kg and above 15 kg. 30 (100%) of them had previous pain experience, and none of them were without previous pain perception.

The post test in study group shows that 4 (13.3 %) children come under the category of pain that hurts little bit, 5(16.7%) children had pain that hurts little more, 3 (10%) children had pain that hurts even more, 11(36.7%) children had pain that hurts whole lot, 7(23.3) children had pain that hurts worst. In control group 3 (10) children had hurts even more, 14 (46.7%) children had pain that hurts whole, 13 (43.3) children had pain that hurts worst.

The mean score standard deviation on level of pain in vaccinated children was 6.8± 2.76 in study group and 8.66 ± 1.34 in control group respectively. The difference in mean percentage was 58. The unpaired ‘t’ value is significant at the level of p 0.05. Hence H1 is accepted.

There was no significant association between the post test level of pain among vaccinated children in study group and control group with their demographic variables such as gender, supportive system, status of the child during vaccination, experience of the injecting nurse, weight of the child & previous pain perception experience. Hence H2 is not accepted.

## Conclusion

The study was done to determine the effectiveness of ice application on pain perception among children receiving vaccination in selected hospital. The mean score on level of pain in study group was 6.8 and in control group was 8.66. The un paired 't' value was 1.8 which is non significant at $p < 0.05$. It shows that ice application was effective in reducing the level of pain perception. From the result of the study, it was concluded that providing ice application was very effective in reducing pain perception. Therefore the investigator felt that more importance should be given for ice application to reduce pain perception before vaccinating the children.

## Nursing Implications

The researcher has derived the following implications from the study which has vital importance to the field of nursing service, nursing administration, nursing education and nursing research.

## Implications For Nursing Practice

Nursing research is to be done to find out the various innovative methods to reduce pain perception. The findings of the study would help to expand the scientific body of professional knowledge upon which their research can be conducted.

## Implications For Nursing Education

The nurse educators should have adequate knowledge regarding the effectiveness of ice application in reducing the pain among vaccinated children. Nursing students should be taught regarding the procedure,the importance of ice application and they should be allowed to practice regarding ice application.

**Implications For Nursing Administration**

Nurses should assist in promoting the ice application among children receiving vaccination in hospitals. Information programmes should be designed by nurses to encourage the practice of ice application among children receiving vaccination.

**Implications For Nursing Research**

Nurses should conduct research to clarify the benefits and optimal effectiveness of ice application among children receiving vaccination and encourage further research of ice application on pain among children receiving vaccination. The reseacher should disseminate the findings of the research through conferences, workshops, seminars and publishing in nursing journals.

**Limitations**

This study did not generalize the effectiveness of ice application for all vaccination. The study did not include all the children receiving vaccination. While applying ice the investigator felt discomfort due to numbness in fingers.

**Recommendations**

The following studies can be undertaken to strengthen the ice application as a good remedy for the vaccinated children.

1. A similar study can be conducted with larger samples.
2. A similar study can be conducted for the other vaccination like measles and typhoid.
3. A similar study can be conducted for the other intramuscular injections.
4. A similar study can be conducted to assess the knowledge of nurses regarding ice application in reducing pain perception among vaccinated children.

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# REFERENCE

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# ANNEXURES

# ANNEXURE I


## St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

**Dr. A. REENA EVENCY,** M.Sc. (N)., Ph.D.,
*Principal*


06.05.2013

To,

The director,

Gerdi gud peril agasthiar muni hospital

vellamadam,

Kanyakumari District

Tamil Nadu.

Respected madam/sir,

Mrs. Mary shalini binu is a student of M.Sc., Nursing II Year in our college from Child Health Nursing Department. She is conducting a study on **"An experimental study to evaluate the effectiveness of ice a study to assess the prevalence andpplication on pain perception among children receiving vaccination in selected hospital at Kanyakumari district".**

This is for the research project to be submitted to the Tamilnadu Dr.M.G.R Medical University in partial fulfilment of university requirement for the award of M.Sc., Nursing degree and will be beneficial for children receiving vaccination.

As part of her study she needs to observe the pain perception among children receiving vaccination. So permission may kindly be granted for her to conduct the study in your esteemed hospital. She will abide by the rules and regulations of your hospitals.

Thanking you,

Yours faithfully,

PRINCIPAL
ST. XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

# St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

**Dr. A. REENA EVENCY,** M.Sc. (N)., Ph.D.,
*Principal*


Date: 07.06.2013

To

The Doctor, (Director)
Dr. Jeyaharan Memorial Hospital,
Nagercoil.

Respected Madam/ Sir,

**Mrs.Mary Shalini Binu** is a student of M.Sc,.Nursing programme from the Clinical Specialty, Child health nursing in our college. She is conducting a study on "An experimental study to evaluate the effectiveness of ice application on pain perception among children receiving vaccination in selected Hospitals at Kanyakumari district"

This is for the research project to be submitted to the Tamilnadu Dr.M.G.R. Medical University in partial fulfillment of university requirement for the award of M.Sc., Nursing Degree and will be beneficial for children receiving vaccination.

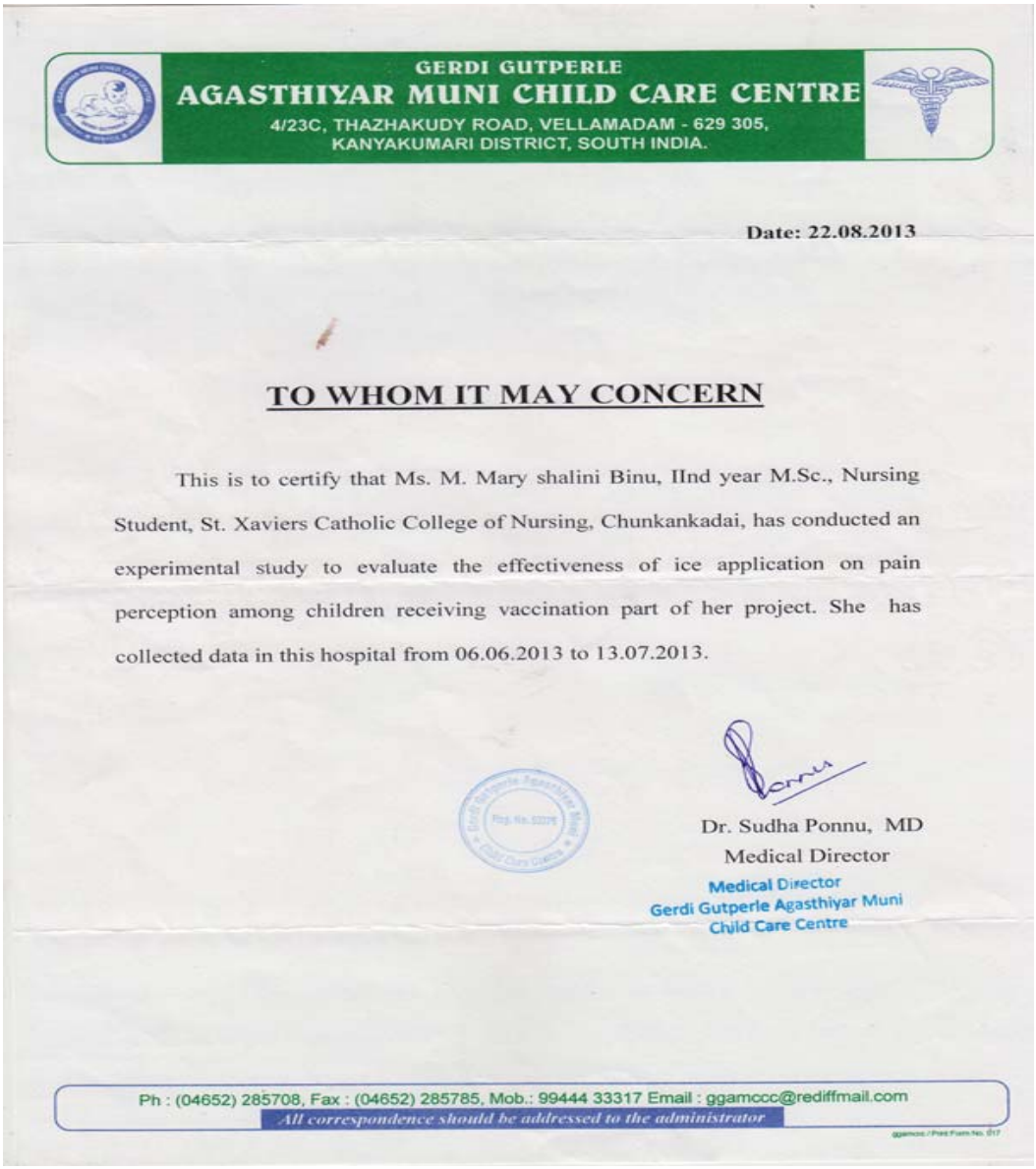
As a part of her study she needs to observe the pain perception among children receiving vaccination. So permission may kindly be granted for her to conduct the study at your esteemed Hospital. She will abide by the rules and regulations of your Hospitals.

Thanking you

Yours faithfully

PRINCIPAL
ST. XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

# ANNEXURE II



GERDI GUTPERLE
AGASTHIYAR MUNI CHILD CARE CENTRE
4/23C, THAZHAKUDY ROAD, VELLAMADAM - 629 305,
KANYAKUMARI DISTRICT, SOUTH INDIA.

Date: 22.08.2013

## TO WHOM IT MAY CONCERN

This is to certify that Ms. M. Mary shalini Binu, IInd year M.Sc., Nursing Student, St. Xaviers Catholic College of Nursing, Chunkankadai, has conducted an experimental study to evaluate the effectiveness of ice application on pain perception among children receiving vaccination part of her project. She has collected data in this hospital from 06.06.2013 to 13.07.2013.

Dr. Sudha Ponnu, MD
Medical Director
Medical Director
Gerdi Gutperle Agasthiyar Muni
Child Care Centre

Ph : (04652) 285708, Fax : (04652) 285785, Mob.: 99444 33317 Email : ggamccc@rediffmail.com
*All correspondence should be addressed to the administrator*

**DR. JAYAHARAN MEMORIAL HOSPITAL**
33, VICTORIA PRESS ROAD, NAGERCOIL - 629 001.
(Ward) 04652-222664
(Hos) 04652-233337
Fax : 04652-223869
email : jmh_ngl@yahoo.in



To

The Principal,
St. Xaviers Catholic College of Nursing,
Chunkankadai,
Kanyakumari District.

TO WHOM IT MAY CONCERN

This is to certify that Ms. M. Mary Shalini Binu, IInd Year M.Sc., Nursing Student, St. Xaviers Catholic College of Nursing, Chunkankadai, has conducted an experimental study to evaluate the effectiveness of ice application on pain perception among children receiving vaccination part of her project. She is has collected data in this hospital from 13/06/2013 to 13/07/2013.

DR. JAYAHARAN MEMORIAL NAGERCOIL HOSPITAL

Date: 13.07.2013

Dr. Sashya Jayaharan
Dr. Sashya Jayaharan, M.D.,D.C.H.,
Dr. JAYAHARAN MEMORIAL HOSPITAL,
33, Victoria Press Road, NAGERCOIL - 629 001.
(Reg.No. 37127)

# ANNEXURE-III

## LETTER SEEKING EXPERTS OPINION FOR THE VALIDITY OF THE TOOL

From,

Mrs.Mary shalini binu M,

M.Sc. Nursing II year,

St. Xavier's Catholic college Of Nursing,

Chunkankadai.

To,

Respected Sir/ Madam,

Sub: Requisition to expert opinion and suggestion for the content validity.

I Mary shalini binu M, M.Sc. Nursing II year student of St.Xavier's Catholic College Of Nursing, Chunkankadai, have selected the following topic, **"An experimental study to evaluate the effectiveness of ice application on pain perception among children receiving vaccination in selected hospitals, Kanyakumari district"** for my dissertation to be submitted to Tamilnadu Dr. M.G.R. Medical University in the partial fulfillment of the requirement for award of Master of science in Nursing.

I request you to go through the items and give your valuable suggestions and opinions to develop the content validity of the tool. Kindly suggest modifications, addition and deletions if any in the remarks column.

Thanking You,

Place: Chunkankadai. Yours sincerely,

Date: Mary shalini binu.M

**ENLOSURE:**

1. Problem statement, objectives, and hypothesis of the study.
2. Demographic profile.
3. Weight monitering scale.
4. Evaluation Performa.

# ANNEXURE-IV

## EVALUATION CRITERIA CHECKLIST FOR VALIDATION

**INSTRUCTIONS:**

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly please tick mark (✓) in the appropriate columns and give remarks. Interpretation column:

Column I – meets the criteria.

Column II - Partially meets the criteria.

Column III – does not meet the criteria.

| S. NO | CRITERIA | 1 | 2 | 3 | REMARKS |
|---|---|---|---|---|---|
| 1. | Scoring<br>-adequacy.<br>-clarity.<br>-simplicity. | | | | |
| 2. | Content<br>-logical sequence.<br>-adequacy.<br>-relevance. | | | | |
| 3. | Language<br>-Appropriate.<br>-clarity.<br>-simplicity. | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 4. | Practicability<br>-easy to score.<br>-precise.<br>-utility. | | | | |

Signature: Any other suggestion:

Name:

Designation:

Address:

## CRITERIA CHECK LIST FOR VALIDATION OF THE TOOL

**INSTRUCTON:**

Kindly give your suggestions regarding the accuracy, relevance and appropriateness of the content. Kindly (✓) against specific columns.

**PART-I**

**Validation of Demographic variables**.

| Item | Very relevant | Relevant | Need for modification | Not relevant | Remarks |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |

# ANNEXURE-V

## LIST OF EXPERTS VALIDATED THE TOOL

1. Dr. Sashya M.B.B.S, M.D, D.C.H.,

   Consultant Pediatrician,

   Dr. jayaharan memorial Hospita,l

   Kannyakumari District.

2. Dr.Diana M.B.B.S., M.D, DCH.,
   Consultant Pediatrician,
   Gerdi Gut perle Agsthiyar Muni Child Care Center, Vellamadam

   Kanyakumari District.
3. Dr. Judie, M.Sc.(N) P.hd (N),
   Dean,
   S.R.M. College of Nursing,
   Chennai.
4. Malichijah, M.Sc., (N)
   Reeder
   Christian College of Nursing,
   Neyyoor
5. Mrs.D. Prema Latha, M.Sc., (N)
   Assistant professor,
   Christian College of Nursing,
   Neyyoor.

## ANNEXURE VI

## INFORMED CONSENT

I_____mother of _____ willing to involve my child to participate in the study to evaluate the effectiveness of ice application on pain perception on children receiving vaccination , without any compulsion.Through the researcher I came to know that ice application will not cause any adverse effects on my child.

Yours Sincerely,

# ANNEXURE VII

JNANODAYA SALESIAN COLLEGE
THE RETREAT
YERCAUD – 636 601
SALEM DT.
TAMIL NADU, INDIA.
Principal

## CERTIFICATE OF EDITING
## TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper titled **"An Quasi experimental study to evaluate the effectiveness of ice application on pain perception among children receiving vaccination in selected hospitals, Kanyakumari district" by Mrs. Mary Shalini Binu. M**, has been checked for the accuracy and correctness of English language usage and that the language used in the tool is lucid, unambiguous free of grammatical or spelling errors and apt for the purpose.

(S. Jayaseelan, M.Ph.)

PRINCIPAL
JNANODAYA SALESIAN COLLEGE
THE RETREAT
YERCAUD - 636 601
SALEM (Dt), INDIA

# ANNEXURE VIII

## CERTIFICATE OF STATISTICAL ANALYSIS

### TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper titled **"An experimental study to assess the effectiveness of ice application on pain perception among vaccinated children in selected hospital, Kanyakumari District"** done by**Mrs. Mary ShaliniBinu. M**has been checked for the accuracy in statistical analysis and interpretation and was apt for the purpose.

Signature

Dr. G. IMMANUEL
Assistant Professor
Centre for Marine Science & Technology
Manonmaniam Sundaranar University
Rajakkamangalam - 629 502
K. K. District, Tamilnadu, India

## ANNEXURE XI

## TOOL FOR DATA COLLECTION

### SECTION A

DEMOGRAPHIC PROFILE

**Instructions:**

The investigator will ask the items listed below and place the tick mark(✓) against the response given by the respondents.

1) Gender of the child
   a) Male
   b) Female

2) Supportive system

   a) Father

   b) Mother

   c) Relation

   d) Others

3)Status of the child during vaccination

   a) Sleepy mood

   b )Anxious

   c) Diverted

   d) Awakened

4)Experience of the injecting nurse

   a) Less than 2 years

   b) 2 to4 years

   c) 4 to 6 years

   d) Above 6 years

5) Weight of the child

a) Less than 10 kg

b) 10 kg to 12 kg

c) 13 kg to 14 kg

d)Above 15 kg

6)Previous pain perception experience

a) Yes

b) No

# ANNEXURE X

# STATISTICAL FORMULA

# FORMULAS USED FOR DATA ANALYSIS

## DESCRIPTIVE STATISTICS

**Mean**

$$\bar{x} = \frac{\sum x}{N}$$

**Standard deviation**

$$s = \sqrt{\frac{\sum(x-\bar{x})^2}{n-1}}$$

## INFERENTIAL STATISTICS

**Independent 't' test**

$$t = \left| x_1 - x_2 \right| \Big/ \sqrt{\frac{{s_1}^2}{n_1} + \frac{{s_2}^2}{n_2}}$$

$$s = \sqrt{\frac{(n_1-1){s_1}^2+(n_2-1){s_2}^2}{n_1+n_2-2}}$$

**Chi-Square test**

$$x^2 = \sum \frac{(o-e)^2}{e}$$

# ANNEXURE XI